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ABSTRACT

Questions relating to decision making and its relatonship to body coordination and self-concept in the elementary school child are investigated in this study. The independent variable of teacher behavior was manipulated in order to provide two related learning environments. One, termed Vertical Teaching, required the teacher to retain all of the decision making authority and responsibility. In the other, termed Horizontal Teaching, some of the teacher's decision making authority and responsibility was shared with the students. The skill areas in which students participated were identical, and included movement exploration activities; gymnastic activities were emphasized. Results of this research supported the thesis that giving students a voice in determining their learning activities during physical education does not result in a decrement in body coordination. Students exposed to the Horizontal Teaching Model did achieve the level of skill development achieved by students exposed to the Vertical Teaching Model. There was no difference in self-concept between the experimental groups. Results indicate that learners can be given some decision making responsibility within the physical education learning environment and, at the same time, maintain an adequate level of achievement. (JD)

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THE EFFECT OF VARIABLE DECISION-MAKING TEACHING MODELS ON ELEMENTARY AGE CHILDREN: MEASURES OF BODY COORDINATION AND SELF-CONCEPT

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The purpose of this study was to determine the effect of variable decision-making teaching models upon the development of body coordination and self-concept in elementary school age children, grades 1 through 5.

Contemporary educational theorists have emphasized the effects of the total educational environment on learning, and have stressed the concept of having learners assume responsibility for their learning. They all have a primary concern - that education be humanistic, that it look to the total individual, and that it develop an educational environment which promotes the total development of the individual in the affective as well as the psychomotor and cognitive domains of learning.

Learners need to develop a belief in themselves as learners, as decision-makers, and as valuable human beings.

The learning environment which would allow the learner to realize what Maslow has described as "self-actualization" usually cannot be suddenly thrust upon learners.

The ability to make decisions is learned - it is a process through which learners should proceed at a pace with which they, as individuals, can cope. Teachers need to realize that to suddenly relinquish their decision-making responsibility to students and then to sit back can have dangerous repercussions. It might be better to provide opportunities for learners to participate in the learning process at whatever level they are capable.

Martinek, in 1976, compared the effect of two different teaching styles upon the body coordination and self-concept development of learners.

He found that self-concept was enhanced in an open educational environment, which he termed "Horizontal Teaching," but found no concomittant increase in motor skill development. He also found that children exposed to autocratic or what he termed "Vertical Teaching" displayed a significant increase in motor skill development but no concomittant increase in self-concept.

It was the purpose of this study to replicate Martinek's study and to further investigate questions relating to decision-making and its relationship to body coordination and self-concept. The independent variable of teacher behavior was manipulated in order to provide two related learning environments, one termed Vertical Teaching in which the teacher retained all of the decision-making authority and responsibility, and one termed Horizontal Teaching, in which some of the teacher's decision-making authority and responsibility was shared with students. The Horizontal learning environment was an attempt to provide what has been described by Katz in 1971 as providing

> adult nuturance, warmth, communication, control, and demandingness in which the child's feelings and ideas are treated by the adult as valid, but in which the adult also exercises control and sets limits.

Teachers for this investigation were a group of eight masters' and doctoral candidates who were teaching assistants at Boston University in the Department of Movement, Health, and Leisure. They were trained, prior to the investigation, in the experimental teaching techniques for each of the two treatments. During the investigation, the teachers were videotaped and the Cheffers' Adaptation of Flanders' Interaction Analysis System was used to validate the teaching patterns determined by Mancini in 1974 and confirmed by Martinek in 1976. The results of the CAFIAS analysis of pre- and post-coding teaching behavior are shown on SLIDE 1.

As can be seen from this table:

1. No significant difference was found between the two teaching treatments for total teacher verbal contribution and total student contribution.
2. A significant difference was found between the two teaching treatments for:
    a. the percentage of teacher verbal questioning - Horizontal teachers used more questions than did Vertical teachers.
    b. the percentage of teacher non-verbal response - Horizontal teachers used more non-verbal responses than did Vertical teachers.
    c. the percentage of total student initiative - students exposed to Horizontal teaching displayed more initiative than did those students exposed to Vertical teaching.

The quality of classroom interaction which occurred during the Horizontal Teaching Model did differ significantly from that which occurred during the Vertical Teaching Model, although the quantity did not. The difference between the two groups was demonstrated in the quality of both teacher and student contribution.

The sample used in this study consisted of 285 inner-city public school children, grades 1 through 5, from two schools which were socially and economically equal. One school, designated as the experimental school, housed two self-contained classrooms of each grade, 1 through 5. One of each of these preformed classroom groups was randomly assigned to each of the experimental treatments. The second school housed one of each grade, 1 through 5, and was designated as the control school. SLIDE 2 illustrates the sample breakdown by GRADE, SEX, AND ETHNICITY.

Representation by each of the designated ethnic groups was approximately the same for the two experimental groups. The control group differed slightly, having a greater percentage of white children, more spanish children, and no oriental children.

Children from the experimental school were brought by bus to Boston University for one forty-five minute period per week. The Vertical Teaching Model Treatment group attended on Tuesdays and the Horizontal Teaching Model Treatment group attended on Thursdays. The control group did not receive any treatment. The length of treatment was one semester.

The skill areas in which students participated were identical for both experimental groups, and included movement exploration activities out-of-doors, and in the gymnasium, gymnastic activities were emphasized. Modified Project Adventure activities were also included.

Learning centers, located around the field and gymnasium, contained task cards and related learning materials with which the teachers worked during Vertical Teaching and students during Horizontal Teaching, ensuring that both treatments were exposed to the same subject matter curriculum.

Testing instruments used included the Schilling Body Coordination Test to measure body coordination, and the Martinek-Zaichkowsky Self-Concept Scale to evaluate self-concept.

Prior to attendance at Boston University, children from both of the experimental groups and the control group were administered the paper/pencil self-concept survey in their home schools by the investigator. During the first period at Boston University, students were administered the Schilling Body Coordination Test by a group of junior physical education majors, who had been previously trained to administer this instrument. The same testing procedure was carried out at the conclusion of the experimental treatments.

Analysis of covariance with planned comparisons was used to measure the effects of treatment on body coordination and self-concept.

A significant F-ratio was obtained for the effects of treatment on body coordination. SLIDE 3 shows that the two experimental groups scored significantly higher than the control group on body coordination on adjusted posttest scores.

SLIDE 4 shows that the two experimental groups were not significantly different from each other in body coordination, indicating that student sharing in the decisions concerning their learning, when accompanied by teacher input, does not result in a motoric learning decrement.

No significant differences for self-concept were found across all treatment groups.

The results of this research support the thesis that giving students a voice in determining their learning activities during physical education does not result in a decrement in body coordination. Students exposed to the Horizontal Teaching Model did achieve the level of skill development achieved by students exposed to the Vertical Teaching Model.

The hypothesized difference in self-concept between the experimental groups was not supported by the results of this research. Self-concept has traditionally proved difficult to change, yet common sense would dictate that the variable is vital. Perhaps the instruments are not yet sensitive enough - or, perhaps the umbrella of "self-concept" is too large a structure under which to huddle. It is probably time we further discriminated the factors involved in this variable.

The results of this study indicate that learners can be given some decision-making responsibility within the physical education learning environment and, at the same time, maintain an adequate level of achievement. They can make decisions and plan constructively to carry them out.

Slide 1

Results of the Statistical Analysis of Teacher-Student Interaction Under Vertical and Horizontal Teaching

	TEACHER 1		2		3		4		
	Vertical	Horizontal	Vertical	Horizontal	Vertical	Horizontal	Vertical	Horizontal	Wilcoxon t
Percentage of teacher verbal contribution	48.62	30.77	40.57	34.94	37.85	53.18	36.88	33.20	3
Percentage of teacher verbal questioning	2.13	23.61	4.65	21.35	2.94	27.66	8.57	24.39	0*
Percentage of teacher non-verbal questions	93.55	100.0	91.30	100.0	88.89	97.14	95.92	100.0	0*
Percentage of total student contribution	23.20	41.96	40.57	37.82	34.58	24.55	27.76	34.43	4
Percentage of total student initiative	11.90	22.50	4.04	23.73	5.41	22.22	5.48	19.05	0*

* $p < .10$

Slide 2

Breakdown of Experimental Treatment Groups by Grade, Sex, and Ethnicity

	GROUP	Gr. 1		Gr. 2		Gr. 3		Gr. 4		Gr. 5		TOTAL	%
		M	F	M	F	M	F	M	F	M	F		
Vertical Teaching (Ex_1)	Black	3	3	6	4	5	4	5	4	3	4	41	39.8
	White	4	3	1	0	4	1	4	1	3	1	22	21.4
	Oriental/ Spanish	3	5	3	6	3	5	3	2	6	4	40	38.8
	TOTAL	11	10	10	10	12	10	12	7	12	9	103	100.0
Horizontal Teaching (Ex_2)	Black	4	4	3	6	5	4	4	4	3	3	40	38.8
	White	1	3	3	1	3	0	3	3	3	3	23	22.3
	Oriental/ Spanish	4	5	6	4	1	6	1	4	6	3	40	38.8
	TOTAL	9	12	12	11	9	10	8	11	12	9	103	99.9
Control	Black	4	4	6	4	3	3	6	8	0	2	40	38.5
	White	4	6	3	5	3	3	2	6	3	4	39	37.5
	Oriental/ Spanish	3	1	4	3	1	3	6	1	1	2	25	24.0
	TOTAL	11	11	13	12	7	9	14	15	4	8	104	100.0

Slide 3

Adjusted Posttest Means and Planned Comparison F-Ratio Obtained by Treatment Groups on the Schilling Body Coordination Test, Total Score

			Planned Comparisons			
			Vertical and Horizontal vs. Control			
Group	N	Adjusted Mean SBCT Total Score	MS	F	df	Significance
Vertical	85	145.27				
Horizontal	78	150.84	130.23	8.61	1,234	$p < .01$
Control	72	136.65				

Slide 4

Adjusted Posttest Means and Planned Comparison F-Ratio Obtained by Treatment Groups on the Schilling Body Coordination Test, Total Score

Group	N	Adjusted Mean SBCT Total Score	Planned Comparison: Vertical vs. Horizontal MS	F	df	Significance
Vertical	85	145.27	31.05	2.51	1,234	$p > .05$
Horizontal	78	150.84				